What is claimed is:

1. A method of identifying a vertical blanking interval (VBI) in a video signal, the VBI including video horizontal lines and horizontal sync (H sync) signals, comprising the steps of:

sensing a time interval which occurs between selected edges of pulses occurring in selected video lines in the vertical blanking interval; and

generating a vertical/frame rate signal in a desired location in the VBI in response to the sensed time interval, wherein the vertical/frame rate signal reliably indicates the presence of the VBI.

2. The method of claim 1 wherein the selected edges of pulses occur in pre-equalizing, post-equalizing or vertical sync pulse intervals of the VBI in the selected video lines.

3. The method of claim 1 wherein the step of generating includes:

producing a timing signal indicative of the desired location; and

regenerating a reliable vertical/frame rate signal at the desired location in response to the timing signal.

4. The method of claim 1 wherein the step of sensing includes sensing the time interval between H sync pulses and detecting when the time interval between H sync signals

is about 32 microseconds (μs) rather than the normal 64 microseconds, which only occurs in the VBI.

5. The method of claim 4 wherein the step of sensing includes supplying the video signal to means for detecting a spacing of 32 μs ± 20%.

6. The method of claim 4 wherein the step of sensing includes sensing for a frequency component corresponding to about a 32 μs period caused by the 32 μs spacing of edges from equalizing pulses and/or serrated vertical sync pulses of the VBI.

7. The method of claim 1 wherein the step of sensing includes gating out the first 5 microseconds (μs) of any H sync signal so that normal H sync signal will not produce an output while pulses longer than 5 μs such as vertical sync signals will produce the reliable vertical/frame rate signal.

8. The method of claim 7 including:

generating an H sync signal which is at least 5 μs duration;

delaying the occurrence of the normal H sync signal; and

combining the longer H sync signal and the delayed normal H sync signal to provide an output of broad vertical sync signals corresponding to the reliable vertical/frame rate signal.

9. The method of claim 1 wherein the step of sensing includes sensing a time interval of about 7 μs between leading edge transitions which occur in the VBI in video lines 6-7 and in line 269.

10. The method of claim 1 wherein the step of sensing includes measuring the pulse widths of sync signals which are less than 4.7 microseconds and which occur in the VBI.

11. The method of claim 1 wherein the step of sensing includes triggering off the leading edge of sync to generate a pulse greater than 4.7 microseconds (μs) but less than about 27 μs to allow the output of broad vertical signals while gating out H sync signals which are greater than 27 μs duration.

12. The method of claim 1 wherein the step of sensing includes measuring the spacing between the trailing edge transitions of two pulses and sensing for a spacing of about 56.5 microseconds which occurs on line 266 and lines 3-4.

13. The method of claim 1 wherein the step of sensing includes triggering off the trailing edge of the H sync signal for a pulse duration of greater than one-half a video line duration and sensing for a spacing of greater than one horizontal line but less than two horizontal lines in selected lines in the VBI.

14. The method of claim 13 wherein the step of sensing includes generating a timing signal whose period is greater than the one-half line duration; and

detecting a period greater than about 64 microseconds (μs) but less than about 128 μs in response to the timing signal.

15. The method of claim 14 wherein the period is about 88 μs,

16. The method of claim 14 wherein the period is about 71 μs,

17. The method of claim 14 wherein the period is about 96 μs.

18. The method of claim 13 including sensing for a spacing between trailing edges on line 266 of about 56.5 μs.

19. The method of claim 1 wherein the VBI includes pseudo sync pulses on selected video lines, and the step of sensing includes sensing the nominal spacing of less than 10 microseconds between the pseudo sync pulses.

20. The method of claim 1 wherein the video signal contains a copy protection signal, further comprising:

modifying the copy protection signal in response to the generated vertical rate signal to attenuate or defeat the effects of the copy protection signal in the video signal.

21. The method of claim 20 wherein the step of modifying includes:

providing a pulse of selected duration in the VBI;

providing regenerated sync pulses substantially similar to the phase and frequency of the normal H sync signal in the video signal;

blanking at least a portion of the VBI in response to the pulse of selected duration; and

adding at least some of the regenerated sync pulses back into the blanked portion of the VBI to alter the copy protection signal accordingly.

22. The method of claim 21 wherein the regenerated sync pulses have a duration of about 1 microsecond to about 10 microseconds.

23. Apparatus for identifying a vertical blanking interval (VBI) in a video signal, the VBI including video horizontal lines and horizontal sync (H sync) signals, comprising:

a timing circuit receiving the video signal for providing a timing signal indicative of the sync signals in the video signal;

a processing circuit responsive to the timing signal for sensing selected pulse widths and/or pulse edge spacings which are peculiar to the video signals in the VBI and for generating a vertical frame rate signal.

24. The apparatus of claim 23 wherein said processing circuit includes means for generating a vertical/frame rate signal at a desired location in the VBI in response to the sensing of the selected pulse widths and/or pulse edge spacings, the vertical/frame rate signal being indicative of the VBI presence.

25. The apparatus of claim 24 wherein the means for generating includes a timing generator circuit for producing a second timing signal for regenerating a reliable vertical/frame rate signal at the desired location in the VBI, which allows a selective modification of the video signal.

26. The apparatus of claim 23 wherein the timing circuit includes a sync separator circuit.

27. The apparatus of claim 23 wherein the processing circuit comprises:

a spacing detector for sensing a period of 32 microseconds ± 20% between pulse transition spacings; and

means responsive to the spacing detector for generating the vertical/frame rate signal.

28. The apparatus of claim 23 wherein the processing circuit comprises:

a frequency sensing circuit receiving the video signal for sensing a frequency component corresponding to about a 32 microsecond (μs) period caused by the 32 μs spacing of edge transitions of equalizing pulses and/or serrated vertical sync pulses in the VBI.

29. The apparatus of claim 28 including:

a one-shot circuit of about a 16 μs period;

a bandpass filter of 20 to 45 kHz coupled to the one-shot circuit; and

a threshold detector circuit coupled to the bandpass filter.

30. The apparatus of claim 23 wherein the processing circuit comprises:

a spacing detector for sensing for 7 microsecond spacings between leading edge transitions in video lines 6-7 and/or 269; and

means responsive to the spacing detector for generating the vertical/frame rate signal.

31. The apparatus of claim 23 wherein the processing circuit comprises:

a spacing detector for sensing for about 56.5 microseconds spacing between trailing edge transitions; and

means responsive to the spacing detector for generating the vertical/frame rate signal.

32. The apparatus of claim 23 wherein the processing circuit comprises:

a pulse width detector for sensing about a 2 microsecond (μs) pulse width; and

means responsive to the pulse width detector for generating the vertical/frame rate signal.

33. The apparatus of claim 32 wherein the pulse width detector receives inverted sync pulses and senses for a 4.7 μs pulse width.

34. The apparatus of claim 23 wherein the processing circuit comprises:

a pulse detector circuit receiving an inverted video signal for gating out the first 5 microseconds (μs) of any sync pulse so that only pulses longer than 5 μs will produce the vertical/frame rate signal.

35. The apparatus of claim 34 wherein the pulse detector circuit includes:

a one-shot circuit receiving the inverted video signal for providing at least a 5 μs pulse;

a delay line receiving the inverted video signal; and

an AND gate receiving an inverted version of the 5 μs pulse and an inverted version of the delayed inverted video signal.

36. The apparatus of claim 23 wherein the processing circuit comprises:

a timing circuit which triggers on the trailing edge of the video sync signal and whose period is greater than one-half of a video line;

a detector circuit responsive to the timing circuit for sensing a period of greater than one horizontal line but less than 2 horizontal lines; and

means responsive to the detector circuit for generating the vertical/frame rate signal.

37. The apparatus of claim 36 wherein the detector circuit is responsive to leading edge transitions from the timing circuit and the period sensed comprises about 71, 88, or 96 microseconds.

38. The apparatus of claim 23 wherein the processing circuit includes an inverter circuit, and a pulse width detector responsive to the inverter circuit for sensing for a 4.7 microsecond pulse period.

39. The apparatus of claim 23 wherein the processing circuit includes a pulse width detector for sensing for a one-half horizontal line (1/2 H) - 2.3 microseconds period in video lines 3-4 and 266.

40. The apparatus of claim 23 wherein the processing circuit includes a pulse width detector for sensing for a period of one-half horizontal line (1/2 H) - 4.7 microseconds.

41. The apparatus of claim 23 wherein the video signal comprises a normal video signal or a video signal containing a copy protection signal, further comprising:

a second processing circuit responsive to the generated reliable vertical/frame rate signal for selectively modifying the normal video signal or the copy protection signal.

42. The apparatus of claim 41 wherein the second processing circuit includes:

a second timing generator circuit for producing a pulse of selected duration in the VBI;

a counter/timing circuit for producing regenerated sync pulses substantially similar to the H sync signals;

a blanking circuit receiving the video signal for blanking at least a portion of the VBI in response to the pulse of selected duration; and

a combining circuit for adding some of the regenerated sync pulses back into the blanked portion of the VBI to modify the normal video signal or the copy protection signal.

43. A method of preventing the generation of a reliable vertical/frame rate signal via unconventional techniques based on the particular characteristics and peculiarities of the signals in a vertical blanking interval (VBI) of a video signal which does or does not contain a copy protection signal, comprising the steps of:

providing a timing/location signal which identifies respective locations of selected portions of the VBI as well as selected video lines; and

modifying various pulse edge spacings and/or widths of selected signals in or near the VBI in response to the timing/location signal to cause their detection to generate an unreliable vertical/frame rate signal.

44. The method of claim 43 wherein:

the step of providing identifies the location of about a 7 microseconds (μs) spacing in video lines 6-7 and/or 269; and

the step of modifying includes substantially attenuating, shortening, lengthening and/or otherwise eliminating the 7 μs spacing to effectively prevent its detection.

45. The method of claim 43 wherein:

the step of providing identifies the location of about a 56.5 microsecond (μs) spacing in video lines 3-4 and 266; and

the step of modifying includes substantially attenuating, shortening, lengthening and/or otherwise eliminating the 56.5 μs spacing to effectively prevent its detection.

46. The method of claim 43 wherein:

the step of providing identifies a location in or near the end of an active video field; and

the step of modifying includes inserting selected signals similar to normal sync pulses into the location to prevent the generation of a reliable vertical/frame rate signal.

47. The method of claim 43 wherein:

the step of providing includes providing H sync and frame signals, wherein the timing/location signal provides line and pixel location signals in response to the H sync and frame signals; and

the step of modifying includes attenuating, width varying, selectively modulating and/or level shifting one or more portion of the video signal in response to the line and pixel location signals.

48 The method of claim 43 wherein the VBI contains half line equalizing and vertical sync pulses, wherein the step of modifying includes modifying any combination of the equalizing pulses or half line pulses in the video lines in the vertical interval, which would cause a 32 microsecond (μs) detector to generate an unreliable vertical/frame rate signal.

49. The method of claim 48 wherein one or more negative or positive going pulse is added or inserted in a selected location in the equalizing pulses.

50. The method of claim 48 wherein one or more equalizing and/or vertical sync pulses are modified by attenuating, narrowing or removing them.

51. The method of claim 43 wherein the various pulse edges may be positive going or negative going.

52. The method of claim 43 wherein negative going pulses, modulated or not, are added or inserted in the video signal outside the VBI to cause detectors of the pulse edge spacings or widths to generate erroneously timed vertical/frame rate pulses.

53. Apparatus for preventing the generation of a reliable vertical/frame rate signal via unconventional techniques based on the particular characteristics and peculiarities of the

signals in a vertical blanking interval (VBI) of a video signal which does or does not contain a copy protection signal, comprising:

a timing circuit receiving the video signal for providing a timing/location signal which identifies respective locations of selected portions of the VBI as well as selected video lines; and

a processing circuit responsive to the timing/location signal for selectively modifying various pulse edge spacings and/or widths of the signals in the VBI, to prevent their detection and thus prevent the generation of a reliable vertical/frame rate signal.

54. The apparatus of claim 53 comprising:

a sync separator circuit receiving the video signal for producing H sync and frame signals;

said timing circuit being responsive to the H sync and frame signals for providing line and pixel location signals; and

wherein the processing circuit comprises a modifier circuit for attenuating, width varying, selectively modulating and/or level shifting a portion of the video signal in response to the line and pixel location signals.

55. The apparatus of claim 53 wherein:

the timing circuit includes an AND gate receiving line and pixel location signals for providing a timing/location signal indicative of selected portions of the video signal; and

the processing circuit includes switch means receiving the video signal and a selected voltage signal and responsive to the timing signal for applying the selected voltage signal to the video signal in the selected portions.

56. The apparatus of claim 55 wherein the selected voltage signal is either negative and/or positive going pulses, wherein negative going pulses are inserted and/or existing negative going pulses are widened when the selected voltage signal is below normal blanking level, and alternatively, existing negative going pulses are at least narrowed and/or positive going pulses are inserted when the selected voltage signal is at about normal blanking level.